NATIONAL TRANSPORTATION SAFETY BOARD
Office of Marine Safety
Washington, D.C. 20594

OPERATIONS/HUMAN FACTORS GROUP FACTUAL REPORT

DCA 08 MM 004

A. ACCIDENT

Vessel:	*Cosco Busan*
Date:	November 7, 2007
Time:	0830 PST (UTC -8)
Location:	40° 27.0' N, 073° 48.0' W
Owner:	Regal Stone Limited, Hong Kong
Managing Operator:	Fleet Management Limited, Hong Kong
Charterer:	Hanjin Shipping Company Limited, Seoul, Korea
Complement:	24 crew members

B. OPERATIONS/HUMAN FACTORS GROUP

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C. SUMMARY

On Wednesday, November 7, 2007, about 0830 Pacific standard time, the Hong Kong-registered, 901-foot container ship *Cosco Busan* allided with the fendering system at the base of the Delta tower of the San Francisco-Oakland Bay Bridge (Bay Bridge). The ship was outbound from berth 56 in the Port of Oakland carrying 2,529 containers. It was destined for Busan, Korea.

The vessel was scheduled to depart the berth at 0630. A San Francisco Bar pilot arrived at the vessel about 0620 and met with vessel's master. Fog had restricted visibility in the harbor, and the pilot and master postponed sailing until visibility improved. While waiting for the visibility to improve, the pilot, the master, and the watch mate adjusted (tuned) the ship's two radars with regard to picture display and target acquisition on the ARPA (automatic radar plotting aid) until the pilot was satisfied that the radars were performing acceptably. According to the voyage data recorder (VDR) transcript, the ship's sailing was also delayed by the need to complete some ship's paperwork. About 0730, the pilot estimated that visibility had improved to approximately 1/4 mile and, according to the pilot's statement, he consulted with the master before getting underway.

About 0745, the vessel departed berth 56 with the aid of the tractor tug *Revolution* on the port quarter pulling with one line and using the ship's 2,700-hp bow thruster. The bridge navigation crew consisted of the master, the third mate, a helmsman, and the pilot. The chief mate and a lookout were on the bow, and the second mate was on the stern. After the vessel eased off the dock, the pilot had the tug shift around to the center chock on the stern as a precaution because of the reduced visibility and, as the pilot later stated, "for insurance in case I needed help in the middle of the channel." With the tug trailing behind on a slack line, the *Cosco Busan* started making headway out of the estuary. The dredge *Njord* was working toward the end and on the west side of the estuary, and the *Cosco Busan* passed to the right of it without incident.

The pilot stated that as the *Cosco Busan* continued to make its way out of the Inner Harbor Entrance Channel, he could see the No. 4 and No. 6 buoys pass by and

noted that their lights were visible. He kept the vessel to the high side of the channel as he departed the estuary in anticipation of the flood current he would encounter. He stated that the visibility again diminished, and that he could not see the No. 1 buoy marking the northern boundary of the entrance to Bar Channel as the vessel passed by. At this time, the vessel was making approximately 10 knots.

D. DETAILS OF THE INVESTIGATION

A human performance specialist from the NTSB's Office of Marine Safety was assigned to the investigation in mid-January 2008. On January 28-31, 2008, the specialist met in San Francisco with members of the operations group. The group interviewed the port agent of the San Francisco Bar Pilots Association, the executive director of the California Board of Pilot Commissioners, and personnel from the U.S. Coast Guard Sector San Francisco, among others. As a supplement to the interviews, the *Cosco Busan* pilot's merchant mariners license documents and personnel records were also examined.

Merchant Mariner Physical Examination Report

The Coast Guard requires that a physician or qualified health practitioner evaluate licensed mariners, other than pilots, every 5 years to determine whether they are medically qualified for Coast Guard licenses. Pilots are required to be evaluated annually. The results of these medical examinations are entered on Coast Guard Form 719k and submitted to the Coast Guard at 5-year intervals, with other documents, for their review. Since 2006, the Coast Guard has required that pilots submit a Form 719k annually.

For additional information, see Medical Report of Mitchell A. Garber, MD.

San Francisco REC Chief

On January 31, 2008, the Safety Board interviewed the Chief of the Coast Guard's San Francisco Regional Examination Center (REC). He stated that the REC, the Coast Guard office that initially receives and then processes mariner documents, did not send the pilot's medical evaluation Forms 719k after 1999 to the Coast Guard's National Maritime Center (NMC) for further review. He cited two reasons why this was not done. First, he interpreted Coast Guard guidance, in the form of an e-mail message to a senior inspector of personnel, as directing RECs to "continue to use the old (Navigation and Vessel Inspection Circular) NVIC (2-98)," that is, the "old" system of reviewing the results of medical evaluations, until the implementation of the revised NVIC. Second, because a waiver had been granted to the pilot in the 1999 review of his 719k, and because, according to the REC chief, the information on the form had not changed substantially after 1999, he believed that the waiver was still valid and that additional review was unnecessary.

After the *Cosco Busan* accident, the Coast Guard asked the pilot to surrender his Coast Guard license, without which he could not exercise the privileges of his California State pilot's license. According to the San Francisco REC Chief, this was done because the Coast Guard's senior medical officer reviewed the pilot's 2007 Form 719k and determined that the medications he was using that he had listed on the form interfered with the performance of his duties.

The REC Chief noted that knowing what he has learned since the accident, "…obviously I would have my staff submit it (the pilot's 719k) to Washington (for additional review). At the time the guidance to my staff was to use the old NVIC as, as guidance to making those decisions."

The San Francisco REC Chief added that the Coast Guard is in the process of centralizing its processing of mariner license applications. Under the new system, all mariner-provided documents will be submitted to the NMC where staff reporting to the agency's senior medical officer will review the 719k forms. Several RECs had already transitioned to the centralized processing and review system. The San Francisco REC is scheduled to do so in April 2008. The revised NVIC, which the Coast Guard has been circulating to the marine industry for review and comment through the Merchant Marine Personnel Advisory Committee (MERPAC), will also list medications and medical conditions that require additional supporting medical documentation and additional medical officer review. According to the San Francisco REC Chief, under the existing ("old") NVIC 2-98, there is no medication that a mariner could include on the 719k that would warrant additional Coast Guard review.

On October 15, 2003, the Staten Island Ferry *Andrew J. Barberi* allided with a maintenance pier as the ship completed a regularly scheduled trip from Manhattan to Staten Island. Eighty-one passengers and crew were injured in the accident, 11 of them fatally.[1] As a result of the accident, the Safety Board made the following safety recommendations to the Coast Guard:

M-05-4

> Revise regulation 46 *Code of Federal Regulations* [CFR] 10.709 to require that the results of all physical examinations be reported to the Coast Guard, and provide guidance to mariners, employers, and mariner medical examiners on the specific actions required to comply with these regulations.

M-05-5

[1] One passenger died more than 30 days after the accident from injuries received in the accident. Her death is included among the 11 killed in the accident. See National Transportation Safety Board, *Allision of Staten Island Ferry* Andrew J. Barberi, *St. George, Staten Island, New York, October 15, 2003*, Marine Accident Report NTSB/MAR-05/01 (Washington, DC: NTSB, 2005).

> In formal consultation with experts in the field of occupational medicine, review your medical oversight process and take actions to address, at a minimum, the lack of tracking of performed examinations; the potential for inconsistent interpretations and evaluations between medical practitioners; deficiencies in the system of storing medical data; the absence of requirements for mariners or others to report changes in medical condition between examinations; and the limited ability of the Coast Guard to review medical evaluations made by personal health care providers.

The Coast Guard responded that, while it did not commit to revising 46 CFR 10.709, it did agree to review its medical oversight process, "focusing on those areas identified by the Board." In response, the Safety Board classified Safety Recommendations M-05-4 and -5 "Open—Acceptable Action."

The Coast Guard's review of its medical oversight system was led by its senior medical officer, in consultation with industry through the MERPAC. The Safety Board, at the Coast Guard's invitation, sent investigators to observe MERPAC meetings in which proposed changes to its medical review system were discussed. At the time of this accident, the Coast Guard's review had not been completed, although, as the San Francisco REC Chief noted, the Coast Guard was in the process of centralizing its medical license review process, one of the improvements the Safety Board had called for in Safety Recommendation M-05-5. Other improvements, including listing of medications and medical conditions calling for additional documentation and medical review, were to be included in a new NVIC, which had not been completed implemented at the time of this accident.

Port Agent, San Francisco Bar Pilots Association

The Safety Board interviewed the president and head of the San Francisco Bar Pilots Association, known as the Association's port agent, on January 31, 2008. He told the Safety Board that the Association primarily serves the business interests of its members, the 60 San Francisco Bar pilots. He stated:

> Obviously, we can't all own pilot boats and all have dispatchers and everything else. So we are put together essentially as independent contractors for the benefit of everyone. As far as [I know] most pilot groups in the U.S. are structured that way.

The port agent stated that he has certain duties established by the State, including general oversight of the pilots of the Association and serving as the Association's point of contact with the Pilot Commission. As the Commission is responsible for overseeing the pilots, he explained his oversight role of port agent as providing business oversight, reporting to the Commission pilots that are involved in incidents or accidents and pilots he suspects may be incapable of piloting for any reason.

As port agent, he is required to inform the Commission if a pilot is unavailable for dispatch for seven consecutive days as a result of sickness or injury. In the five nonconsecutive years that he has served as port agent, he has reported two pilots to the Commission, one for age related performance concerns and one for behavioral issues. The latter was the pilot of the *Cosco Busan* in an October 9, 2004, incident that occurred while he was piloting the U.S Navy vessel *Tarawa.*

The Association works with the Commission to implement its regulations. For example, the Commission mandates the experience level required of pilots before they can pilot vessels of certain gross tonnage, and the Association maintains and oversees the records of pilot experience to ensure that pilots meet the Commissions' qualifications on the vessels they pilot. The Commission also establishes training requirements and the Association ensures that its member pilots have met the Commission's training specifications. At the request of the Commission, the Association will distribute to its members mishap investigation reports of the Commission. The Commission may also mandate that a pilot who was involved in a piloting incident, present a lessons learned session about the incident to pilot trainees.

The Association provides guidance to its members on operating practices, some involving lessons learned from pilot-involved mishaps, but not written requirements. For example, it encourages pilots to engage masters in pilot-master exchanges but does not require them. It also publishes guidelines made available to all, based on input received from its pilots. He explained that one cannot write a policy for every possible scenario that a pilot could encounter and that effective piloting cannot be driven from a central office. Rather, he noted that "…part of the reason the ship hires a pilot is for his…expertise onboard the vessel."

The Association has no policy prohibiting departures from the dock during poor visibility conditions, although the port agent noted that the San Francisco Harbor Safety Committee recommends against departures when visibility is less than ½ mile. As he explained, such "blanket regulations" could be difficult to implement "…because we deal with summer fog constantly and, frankly, it would shut all the ports down if you just had a blanket regulation."

With regard to the conditions that were prevailing at the time of the accident, he could not say whether he would have departed the dock or not. However, he added that, "…from what I heard about the conditions, I would not have departed."

Executive Director- California Board of Pilot Commissioners

The Safety Board interviewed the California Board of Pilot Commissioners executive director on January 31, 2008. He told Safety Board investigators that the Commission was established by the State of California to oversee the performance of State-licensed pilots in the San Francisco Bay area as well as one inland pilot. The Commission, which reports to the Governor of California, establishes the selection and training standards of the pilots, investigates pilot-related incidents through its Incident

Review Committee (IRC), the unit that conducts investigations of mishaps involving pilots, and recommends corrective action at the completion of its investigations. The IRC is composed of the executive director and a public member of the Commission. The results of the investigations are made public and given to the San Francisco Bar Pilots Association for distribution to its member pilots. The executive director indicated that he is in regular contact with the Association's port agent and speaks with him "multiple times during a week" on Commission matters.

The Commission does not establish medical standards for the pilots. Rather, it adheres to Coast Guard medical standards and requires its pilots to be medically evaluated by one of four specified physicians for their State licenses, although pilots may be evaluated by any qualified health care practitioner for their Coast Guard medical evaluation. The physician will certify to the Commission whether a pilot is medically fit for duty based on Coast Guard standards and to those in 1984 guidelines, known as SHIPS, or Seafarers Health Improvement Program. The Commission has no additional reporting requirements for medication use or change in medical condition beyond those that the Coast Guard has established.

When he was asked about the 14 pilot-related incidents in the records of the *Cosco Busan* pilot (detailed later in this report), the executive director said that the he would expect to see "some but not many" incidents in the record of a pilot with the 26 years of experience such as the *Cosco Busan* pilot had accrued. He characterized the number of that pilot's incidents as "more than average in number but not by much." He also indicated that the record of the pilot's incidents, which date back to 1983, makes it difficult to compare his earlier performance with his later performance because "the system of investigation wasn't as sophisticated as it is now…." As noted below, the Commission considered the *Tarawa* incident a medical one and the other incidents involving the pilot as performance-related.

The executive director said that there are no guidelines or advisories to suggest to the Commission how to interpret a series of pilot-related incidents as a trend in performance. There was no need for this, he believed, because "…the number of incidents (that call for investigation) is relatively small. In some years we have as few as six." The most investigations the executive director remembered conducting in a single year was 19. The Commission relied on the port agent to inform it of serious pilot-related problems.

At the conclusion of an investigation, the Commission's IRC, will, if necessary, recommend remedial or punitive action against a pilot. Action may involve additional training or, if the error was sufficiently great, the IRC may recommend license suspension or revocation to the Commission which has the authority to take such action after a public hearing presided over by an administrative law judge. The executive director recalled that the most recent incident in which the Incident Review Committee recommended action against a pilot's license occurred in 2000 when the Commission sought the suspension of a pilot's license. The pilot retired before the suspension could take effect. The executive director indicated that the

most severe action he remembered the Commission taking was in 2000 when a pilot's license was revoked, an action that was reduced to a 6-month license suspension. The director noted that the Commission called for 'at least a dozen" suspensions. Some were 2-month suspensions with a "pretty fair number" of 2-week suspensions.

The executive director said that the Commission works proactively with the Coast Guard to maintain safety by providing "the best trained pilots" it can. It does this through its pilot selection and training standards. Before pilots are selected the Commission must perceive that within the subsequent one to three years a need for pilots will develop. To be selected, pilot candidates must possess a Coast Guard masters license for vessels of minimum 1600 tons and navigation experience with at least two years of vessel command time—with one year occurring within the previous three—and two years of vessel experience within the previous five. The candidate must also meet strict knowledge and skill assessments, including ship handling demonstrations at the California Maritime Academy simulator. Once selected and trained, pilots must pilot vessels of a given size, in three categories of length, for at least nine months before being permitted to move up to a larger class of vessels. All pilots are required to attend a 5-day class in bridge resource management, which includes classes in electronic chart use, every three years. If an individual is unable to maintain his or her Coast Guard license for any reason, that individual could not perform as a State-licensed pilot.

There is no formal method by which the Commission maintains contact with other pilot oversight organizations, although, as the executive director noted, he maintained "informal contacts" with colleagues in Washington State and Oregon. He noted that in the early 1990s, Commissioners in Florida hosted two "Pilot Commission Symposia," with a third one held later in New Orleans. The programs, which he described as "fairly informal," "gave us an opportunity to talk about what our programs were like, and it was, it was mostly looking at each other's training. We [also] talked about our incident investigation process." Since the symposium in New Orleans, no additional meetings of pilot oversight organizations have been conducted.

Pilot's Incident Record on File with California Board of Pilot Commissioners

The following 14 incidents were included in the personnel file that the California Board of Pilot Commissioners maintained on the *Cosco Busan* pilot.

M/V PIONEER: On February 20, 2006, the vessel *Pioneer* grounded in the vicinity of Pt. Beenar while being piloted by the *Cosco Busan* pilot. There was no damage to the vessel or to the environment. The Commission faulted the pilot because he "…had not realized [that] the vessel was going off track and did nothing to prevent it," and attributed the accident to the pilot's "lack of situational awareness." On July 14, 2006, the Commission issued a letter of reprimand to the

pilot for his role in the incident and counseled him to “maintain better situational awareness.”

USS TARAWA: On October 9, 2004, according to the Commission, the pilot reportedly became “enraged” when boarding a Navy vessel at the offshore pilot station because the pilot ladder was equipped with tag lines used to hoist the ship’s ladder when not in use. The pilot cut off the tag lines and was reported to have used “offensive and derogatory language” to the vessel’s officers and crewmembers. On October 14, 2004, the Association port agent reported the incident to the Commission, indicating that the Association would remove the pilot from the duty rotation until the Commission completed its investigation.

The Commission, with the Coast Guard, investigated the incident. The Commission treated the incident as a medico/behavioral issue and requested the pilot to undergo an independent psychiatric evaluation to determine his medical ability to serve as a pilot. The evaluation found the captain to be fit for duty. As a result, in March 2005, the Commission allowed him to return to duty under additional monitoring and oversight, as the examining psychiatrist had recommended. In an August 8, 2005, letter to the pilot closing its investigation, the commission noted that despite the pilot’s anger and reported behavior, he piloted the vessel safely “under challenging environmental conditions.” The letter, which was to be included in the pilot’s file with the Commission, noted that his “unprofessional conduct…had the potential of distracting the bridge team from the safe navigation of the vessel.”

M/V GINGA KITE: On October 6, 2002, the chemical tanker *Ginga Kite* interacted with another tanker that was moved four feet off of the dock to which it was moored, as the tanker was being piloted to a terminal in Pittsburg, California. The Commission was notified of the incident by a terminal representative two days after the event, by which time both vessels had departed the area.

The Commission’s investigation was limited as a consequence of the departure of the vessels. It relied on statements of the pilot and representatives of the two vessels for incident-related information. Because of the insufficient information available to the Commission, it closed the investigation without attributing responsibility for cause. It concluded that, “regardless of causes in this incident, pilots should pay close attention to potential vessel interaction situations and proceed at minimum speeds consistent with good vessel maneuverability.”

M/V CHIMBORAZO: On July 16, 2002, the motorized vessel *Chimborazo* contacted a wharf while the pilot was serving as vessel pilot. The Commission concluded that the pilot “…had the vessel well under control” and that, rather than any performance deficiency on the part of the pilot, the allision was caused by a springline that snagged on part of the dock. The case was closed without action taken against the pilot.

M/V MARE CASPIUM: On April 23, 1997, with the pilot overseeing the performance of a pilot trainee on the bridge, the motorized vessel *Mare Caspium* allided with a container gantry, causing minor damage to the vessel and the gantry. The Commission attributed the incident to “minor pilot error,” and no further action was taken.

PREVIOUS INCIDENTS: The record of the Commission’s incident investigations before 1997 are less complete than those of investigations occurring later. Before 1997, the record lists primarily the dates and locations of eight relatively minor incidents and the determination of cause. One incident occurred in 1983, three in 1986, one in 1987, two in 1990, and one in 1991. After a 1986 incident in which the vessel struck a submerged object, notice was sent to all pilots to remain 200 feet away from Potrero Point. As a result of six of the remaining seven incidents, the Commission counseled the pilot.

Barry Strauch
Supervisory Marine Investigator